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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/539,016
Filing Date: June 16, 2005
Appellant(s): LEVERS, ANDREW

Stanley C.Spooner
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 10/06/2009 appealing from the Office action mailed 02/04/2009.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

Appellant's brief presents arguments relating to claims 27-37 being withdrawn from consideration (due to lack of unity restriction requirement). This issue relates to petitionable subject matter under 37 CFR 1.181 and not to appealable subject matter. See MPEP § 1002 and § 1201.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,089,061	HASS	7-2000
6,264,771	BORNSCHEGL	7-2001

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 10-17 and 38-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Haas et al. (USP 6,089,061).

Haas et al. teach an apparatus comprising a shaped surface defined by a collection of pins 5, 505 with intermediate interpolating pads 210 which during use receives and supports the component to be modified and deform to the shape of the shaped surface. The shaped surface is defined by an open structure, which is separated by the gaps between the pins (see figure 4B element 150 represents a gap i.e. spaced apart, additionally see figure 5 and 6 where the pins are shown in more detail and a space between pins can be seen, i.e. spaced apart). The intermediate surface dependent on the smooth surface which bridges the gaps (as seen in figure 1),

therefore the intermediate member must be sufficiently stiff so that it suffers no local deformation in regions that bridge the gaps (column 7 lines 33-58).

The preamble limitation of “for shaping an aircraft component by creep forming the component” is a recitation of intended use. As per MPEP 2114 relating to Apparatus and Article claims – Functional Language: While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. >*In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997). As the references and the claimed apparatus are patentably indistinguishable in terms of structure, the apparatus of the prior art is reasonable expected to be able to perform the claimed functionality (i.e. shape an aircraft component by creep forming the component).

In regard to **claims 2 and 3**, as seen in figure 1, the intermediate members 210 are generally sheet like with a constant thickness.

In regard to **claim 10**, as noted above, the shaped surface is defined by an open structure. As seen in figure 1, a gap exists between the individual pins 505.

In regard to **claims 11 and 12**, the shaped surface is defined by a multiplicity of spaced apart elements (such as pins 505); the shape to which the component will be modified is dependent on the smooth surface defined by the multiplicity of separate elements 505.

In regard to **claim 13**, the elements are arranged in common modules 560 (groups) which remain mounted and in a fixed relation to each other (figure 2; column 6, lines 57-65).

In regard to **claim 14**, the elements 505 make up rows and columns which may be oriented into a ribbed structure such as seen in figure 2.

In regard to **claim 15**, the modules 100 can be placed in any orientation for the required plan form (figure 5; column 9, lines 19-21) and are identical and interchangeable (column 10, lines 6-8) and are threaded such that they may be attached (and detached) by drive nuts or couplings 15 or 505 as seen in figure 5 (column 7, lines 58-64) and therefore are movably (and removably) mounted on the apparatus.

In regard to **claim 16**, the modules 100 (portion of the elements) are engaged with each other by a controller (corresponding portion of the apparatus) (column 10, lines 6-31) and the elements (pins 505) are not restricted from movement away from the apparatus (figure 2).

In regard to **claim 17**, the shaped surface of the pins is set into place and the pads 210 must be sufficiently rigid to prevent local crippling or damage to the aircraft component 200 (column 7, lines 35-40).

In regard to **claims 38 and 39**, Haas et al. teach that this forming apparatus is capable of making honeycomb cores (aircraft components) which are used in the aerospace industry; where many aircraft require honeycomb core formed structures for their strength to weight ratio (column 10, lines 46-59).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 4, 5, 7-9 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haas et al (USP 6,089,061).

Haas et al. teach a shape modifying apparatus as applied above. **Claim 4** differs from the reference in calling for the intermediate member to be flat prior to use. However it would have been obvious that this member would be flat prior to use because Haas et al. teach the intermediate members are open-weave fiber or mesh pads, which typically originate as flat sheets. Although the intermediate member 210 as shown in figure 1 is not flat (because it is conforming to the shaped surface), it is reasonably assumed that the intermediate member 210 would start as a flat sheet in order to be uniformly deform to the contour of the shaped surface.

In regard to **claim 5**, Haas et al. teach an apparatus as applied above where the intermediate member deform to the shape of the shaped surface. Although not specifically disclosed, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the intermediate member reusable in order to reduce the cost using the reshaping apparatus.

In regard to **claim 7**, Haas et al. teach an apparatus as applied above where the intermediate member is placed (free to move) over shaped surface (column 7, lines 33-40). Although not specifically disclosed, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide predefined boundaries to prevent the member from falling out of the apparatus as it is not rigidly attached.

In regard to **claims 8**, although Haas et al. does not specifically disclose that the workpiece is free to move in directions parallel to the shaped surface, Haas et al. teach that the workpiece maybe different sizes (column 9, lines 5-10) and therefore it is reasonably assumed that a workpiece which is substantially smaller than the forming cavity would be free to move over the shaped surface. The Examiner notes this claim relates to the component acted upon by the apparatus, however per MPEP 2115: "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). Furthermore, "[i]nclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims." *In re Young*, 75 F.2d *>996<, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)). As the apparatus of Haas et al.

is structurally equivalent to the claimed apparatus, the shaping apparatus of Haas et al. is reasonably assumed to be capable of being arranged such that the aircraft component is free to move in directions parallel to the shaped surface.

In regard to **claim 9**, as seen in figure 1, a wall 280 prevents the aircraft component 200 from moving beyond predefined boundaries.

In regard to **claims 18 and 19**, As per MPEP 2114 relating to Apparatus and Article claims – Functional Language: While features of an apparatus may be recited either structurally or functionally, claims< directed to >an< apparatus must be distinguished from the prior art in terms of structure rather than function. >*In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997).

As the reference and the claimed forming apparatus are structurally equivalent, the apparatus of the prior art is reasonable expected to be able to perform the claimed functionality (i.e. such as forcing the component against the shaped surface by providing an air pressure difference, by suction) because the pins 505 in the apparatus of Haas et al. are provided with holes 516 to allow the passage of air or gas into or out of the forming chamber by the air forced through a blower 250 (figure 3; column 7 line 33 – column 8 line 21) it would have been obvious to one of ordinary skill in the art at the time of the invention that the apparatus of Haas et al. is capable of creating an air pressure difference by suction by simply reversing the action of the blower 250.

6. Claims 1 and 18-26 rejected under 35 U.S.C. 103(a) as being unpatentable over Bornschlegl et al. (USP 6,264,771 cited in IDS) in view of Haas et al (USP 6,089,061).

Bornschlegl et al. teach an apparatus for modifying the shape of an aircraft component (column 1, lines 6-8) where the component is forced against a shaped surface of the bottom segment 6 by an air pressure difference provided by suction of a vacuum foil (16, bag) (column 2, lines 30-34).

Independent claims 1 and 21 differ from the reference in calling for an intermediate member and the shaped surface to be defined by an open structure, the open structure including spaced apart elements separated by gaps, the shape to which the component may be modified being dependent on the shape defined by the notional smooth surface enveloping the elements and bridging the gaps, the intermediate member being sufficiently stiff that in use during the forcing of the aircraft component against the shaped surface, the intermediate member deforms substantially to the shape of said notional smooth surface, but suffers substantially no local deformation in regions of the intermediate member that bridge the gaps.

However, Haas et al. teach an apparatus for shaping an aircraft component comprising a shaped surface defined by a collection of pins 5, 505 with intermediate interpolating pads 210 (which during use receives and supports the component to be modified) which deform to the shape of the shaped surface. The shaped surface is defined by an open structure, which is separated by the gaps between the pins (spaced apart elements). The intermediate surface dependent on the smooth surface which bridges the gaps (as seen in figure 1), therefore the intermediate member must be sufficiently stiff so that it suffers no local deformation in regions that bridge the gaps (column 7 lines 33-58).

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide such a shaped surface and intermediate member in the apparatus of Bornschlegl et al. in order to obtain a forming apparatus with a reconfigurable shaped surface to facilitate the shape modifying of the aircraft component to any desired shape provided by the reconfigurable upper and lower dies of Haas et al.

In regard to **claims 18-20, 22 and 23**, Bornschlegl et al. teach a vacuum foil (16, bag) which encompasses the component 6 and a portion of the mold face (12, part of the apparatus) on the opposite side of the shaped surface, where the vacuum foil is sealed to the mold shell (10, base) in order to force the component against the shaped surface by means of suction (figures; column 3, lines 8-10).

In regard to **claim 24**, Bornschlegl et al. do not specifically teach that the vacuum foil (16, bag) is reusable, however it is reasonably assumed that this component is reusable, in the event that it is not taken to be reusable, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the vacuum foil reusable in order to reduce the cost using the reshaping apparatus.

In regard to **claim 25**, Bornschlegl et al. teach the reshaping apparatus as a creep forming tool (column 1, lines 19-20).

In regard to **claim 26**, Bornschlegl et al. teach using the reshaping apparatus for modifying metallic components (column 1, lines 6-65).

(10) Response to Argument

In response to **point A** in the appeal brief that the restriction is improper (appellant asserts that the special technical feature is not anticipated) this issue relates to petitionable subject matter under 37 CFR 1.181 and not to appealable subject matter. See MPEP § 1002 and § 1201. In any event, this argument will stand or fall in accordance with the rejection of independent claims.

In regard to arguments **(B)-(F)** in the appeal brief - Appellant's arguments have been fully considered but they are not persuasive.

Specifically in regard to the Haas et al. reference, appellant contends (**point B**) that the apparatus of Haas et al. does not define spaced apart elements separated by gaps, which in turn make up the claimed "open structure". However, Haas et al. specifically discloses that the Figure 4B is a top view showing the channels which are formed between groups of pins (column 6 lines 43-47) and as seen in the more detailed drawings of figures 5 and 6 these pins are not touching each other (as these are moving parts and contact would result in undesirable friction/wear). As there is no specific definition of "spaced apart" (in fact support for this recently added amended limitation is taken from the instant drawings) or "open structure" the pins of Haas et al. is taken to embrace this limitation absent evidence to the contrary. The Examiner respectfully disagrees with appellant's assertion that claimed limitations have been ignored.

Appellant's argument that Bornschlegl et al. does not show an intermediate member which suffers no deformation while bridging the gaps to conform to the shape

of the smooth surface defined by the shaped surface is immaterial as Bornschlegl et al. is used in combination with Haas et al. who uses an intermediate member (interpolating pad 210) which is clearly shown in figure 1 of Haas et al. This argument amounts to a piecemeal analysis of the rejection. In response to appellant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In regard to **point C-1**, as noted above, Haas et al. teach the elements of the reconfigurable surface are separated by gaps 150 (figure 4b). Appellant's argument that figures 5 and 6 are exploded perspective views is immaterial as the gaps 150 are clearly designed to be part of the reconfigurable surface. Appellant is attempting to construe the Haas et al. reference such that pins 505 would be in contact with each other however such would be an unsatisfactory modification to the reference because it would result in undesirable wear and friction between the pins.

Appellant is also arguing (**point C-2**) that the gaps 150 disclosed by Haas et al. are not gaps by the common definition. This argument is unfounded as gap 150 is clearly a gap. In fact, Appellant's gaps do not conform to the overly specific definition which appellant seeks to rely on ("a break in a barrier")

In regard to **point D**, appellant argues that if the pins of Haas et al. were separated by gaps they would not be able to limit each others movement as disclosed in the reference. However, as noted above, the pins are separated by gaps and still

function to limit each others movement within the confines of the adjacent pins.

Appellant is taking a very specific definition of gap that is not supported by the instant specification and cannot be read into the claims. Although it is appreciated that the gaps in appellants' apparatus are much larger than in Haas et al. the reference is completely functional with the small gaps 150 disclosed.

In regard to **point E** - Appellant again argues the Bornschlegl et al. reference alone; however this reference is used in combination with Haas et al. In the combination the reconfigurable surface of Haas et al. is used and therefore the intermediate interpolating pads 210 of Haas et al. are required.

In regard to **points F and G** - The references are not teaching away from each other, albeit there are structural differences between the apparatus, they both teach apparatus for shaping aircraft components and one reading the references as a whole would have appreciated there combined teachings to obviate the claimed apparatus. Bornschlegl et al. has a rigid structure which is not reconfigurable and therefore the component is pressed directly against the desired shaped surface. In Haas et al. a reconfigurable surface is used and requires an intermediate member. In the combination, a reconfigurable surface, intermediate member and vacuum bag are used.

Bornschlegl et al. does not teach away from a reconfigurable surface, the reference simply did not contemplate such a feature. Haas et al. does not teach away from spaced apart elements, but because the surface is reconfigurable, more pins are necessary and there are no *large* gaps (because the apparatus is designed to be able to create *any desired surface* such as a non-uniform surface with closely spaced

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deviations in height/thickness), whereas Bornschlegl et al. contemplates making a single generally planar airfoil shape.

Appellant's argument that the pins would not be able to move (vertical adjustment) if they were not touching (because of lead screw turning) is immaterial as the lead screws 10 are inside of each pin and drive them up and down completely independent of the adjacent pins (see Haas et al. column 8 lines 5-15) and because the pin's motion is also restrained by tooling frame 285.

In summary, Haas et al. teaches channels 150 between the pins (figure 4B, **column 6 lines 43-47**) which anticipate the claimed "open structure including spaced apart elements separated by gaps" which is appellant's special technical feature which is allegedly not taught by the prior art.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Nicholas P D'Aniello/

Examiner, Art Unit 1793

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